

Lighting the Way

The Reading Panel Report Ought to Guide Teacher Preparation



BY ROBERT RICKENBRODE AND KATE WALSH

People working to improve public education often wonder if we can borrow successful practices from other professions—an idea that, if adopted, would have an immediate positive and significant impact on student learning. These comparisons are typically framed as “education and teaching should become more like *this*.”

We take a different tactic in this essay and argue that in several important ways, education is already very much like another profession: medicine.

In 2011, the Centers for Disease Control and Prevention (CDC) reported a remarkable medical triumph: central line infections in US intensive care units had fallen by 58 percent in just 10 years.¹ Central lines are catheters inserted into major veins; the infections

they cause are always serious and sometimes fatal. The cause for this drop was not a miracle drug or wonder technology. Rather, it was a simple checklist:²

1. Wash your hands using soap or alcohol prior to placing the catheter.
2. Wear a sterile hat, mask, gown, and gloves, and completely cover the patient with sterile drapes.
3. Avoid placing the catheter in the groin, if possible (this has a higher infection rate).
4. Clean the insertion site on the patient’s skin with chlorhexidine antiseptic solution.
5. Remove catheters when they are no longer needed.

This checklist was the result of the efforts of Dr. Peter Pronovost at Johns Hopkins University. He was inspired by the checklists present in the aviation industry, such as the one used by pilots and copilots before takeoff. This list covers an immense set of complex technological, social, and physical interactions that have potentially dire consequences if improperly completed. Pronovost saw an obvious parallel situation in hospitals, intensive care units, and operating rooms: complex tasks and potentially dire consequences.

But there was one big distinction: the differential impact the

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initial state of the “clients” has on potential outcomes. Passengers are typically healthy when they board an aircraft; assigning responsibility if they are harmed is straightforward. A very sick patient entering a hospital is less likely to respond to treatment, regardless of the knowledge, skill, or determination of the caregivers or scientific verity of the medical intervention. Thus, for hospitals, it’s harder to assign responsibility for bad outcomes.

The fact that medical professionals cannot be held fully responsible for health outcomes makes it difficult to justify making changes in standards of care. Recognizing this, Pronovost wanted to reduce “preventable harm”—the injuries, complications, and infections caused by the quality, sequence, and comprehensiveness of the care provided by medical professionals. In short, hospitals must intervene, and with such interventions, there is always a risk of further complication and harm. He wanted to minimize that risk.

It would be easy to conclude that this is simply a case of getting the right information to the skilled and caring doctors and nurses in hospitals at the right time. And indeed, there was some of that: Pronovost notes that the five-item checklist is the distillation of a 120-page guidance document³ from the Centers for Disease Control and Prevention regarding the prevention of central line infections. But that was relatively easy; convincing the physicians to follow the checklist for *each and every* line insertion was much more challenging.

Pronovost and his team uncovered two obstacles to implementation. First, the intensive care unit (ICU) where Pronovost was working was not designed around the checklist, so supplies were scattered around each room. This was solved by the creation of central line carts holding all the necessary supplies.

The second obstacle was oversight—moving from a model where physicians policed themselves to one where the nurses were empowered to require adherence to the checklist. This proved much more formidable, since hospital culture has firmly installed “infallible” doctors at the top of the hierarchy.

Pronovost and his team persevered, and, in his words, “the results were staggering.” One year after nurses were required to ensure that every central line insertion followed the checklist, infection rates dropped to nearly zero, saving an estimated eight lives.⁴

Pronovost and his team built on this success to develop a model, Translating Research Into Practice (TRIP), that they used to develop checklists to reduce ventilator-associated pneumonia⁵ and surgical site infections.⁶

But his earlier successes did not ensure automatic adoption of the subsequent checklists he developed through the TRIP process. For example, the surgical site infection checklist (based on rigorously researched guidance documents from the CDC and other professional organizations) recommends that the surgical site not be shaved because razor-based shaving nicks and damages the

skin at the site, making the area more susceptible to postoperative infections. Instead, surgeons should use electric clippers to trim the hair (without taking it down to bare skin).

Pronovost recalls how, after resorting to removing razors from all of the operating rooms and ceasing all orders for razors, a “black market” in razors sprung up: nurses and doctors would collude to bring or conceal razors in the rooms to continue shaving. Pronovost saw this as strangely rational patient advocacy:⁷

They wrongly believed that shaving lowered infection risk. This belief was based on information more than a decade old but also on their direct observation—when they used a razor they got a clean shave; when they used the clippers, some hairs remained and, theoretically, could fall into the wound. Surgeons reasoned, wrongly, that clean-shaved skin would have a lower infection risk than skin with stubble. If these doctors had a way to monitor their own infection rates, they would have known this assumption was wrong. Or if they had read the studies, published mostly in medical and infectious disease journals, they would have realized their assumption was wrong.

Indeed, Pronovost considers this initial attempt at a surgical site infection checklist a failure. His team was not able to achieve the reduction in infection they sought. But he learned that culture is critical. He realized that he needed to figure out how to foster cultural change in hospitals around the country.

Looking for “Preventable Harm” in Schools

We argue that guidance just like the CDC’s for preventing central line infections already exists in education: *Teaching Children to Read*, the report the National Reading Panel (NRP) published in 2000.* This scientific meta-analysis of hundreds of experimental studies identified five essential core components of early reading success for children, which can serve as the basis for creating *and using* a Pronovost-style checklist. Here are the five components distilled to checklist length:

1. Phonemic awareness: the ability to distinguish and manipulate the 44 fundamental sounds (phonemes) that comprise spoken English. The NRP meta-analysis notes that explicit (and brief) instruction in phonemic awareness, through activities like rhyming, blending, or segmenting sounds, should be undertaken in preschool or kindergarten and is one of the best predictors of how readily children will learn to read in the first few school years.
2. Phonics: knowledge of the correspondence between the sounds (phonemes) and letters or combinations of letters

*To read the National Reading Panel report, visit www.nationalreadingpanel.org.

(graphemes) in English. The NRP meta-analysis recommends early, explicit, and systematic instruction in these correspondences, starting with the most frequently found sound-spelling combinations.

3. Fluency: the ability to accurately and rapidly read isolated and connected English text. If students do not achieve a level of reading automaticity (there are measures and explicit metrics),⁸ the child's working memory is overwhelmed with decoding and comprehension suffers. The NRP recommends providing explicit fluency practice in the early elementary years and distinguishes between common instructional practices that develop fluency (guided oral reading) and those that don't (round-robin reading).
4. Vocabulary: oral vocabulary is important when children are first learning to read, but students must build their reading vocabularies to comprehend texts (which simply put, requires lots and lots of reading practice). The NRP recommends a variety of practices to develop children's vocabulary and notes that an assortment of practices leading to multiple exposures for vocabulary is optimal.
5. Comprehension: the ability to integrate new information with prior knowledge and to derive meaning from novel texts. The NRP reinforces the importance of building students' oral and reading vocabularies, and recommends that time be dedicated to explicit comprehension strategy instruction, such as using graphic organizers, summarizing, and asking and answering questions during reading.*

Like the Pronovost checklist, these five essential components represent the distillation of hundreds of scientific studies—they translate research into practice. Like the Pronovost checklist, each

*However, the NRP report, like all meta-analyses, is limited to the areas investigated. Daniel T. Willingham, a psychology professor at the University of Virginia and the author of *American Educator's "Ask the Cognitive Scientist"* column, has explained that such comprehension strategy instruction should be brief and that more time should be devoted to building students' background knowledge. For Willingham's review of the research on comprehension strategies, see "Ask the Cognitive Scientist: The Usefulness of Brief Instruction in Reading Comprehension Strategies," available at www.aft.org/pdfs/americaneducator/winter0607/CogSci.pdf. For Willingham's review of the research on background knowledge, see "How Knowledge Helps," available at www.aft.org/newspubs/periodicals/ae/spring2006/willingham.cfm.

component summarizes a set of practices, procedures, and measures. And, like the Pronovost checklist, the five essential components are all required to reduce the risk of reading failure, to minimize "preventable harm."

Indeed, effective teacher instruction in all five components—and student mastery of the first three components—by the third grade is *critical* for long-term student outcomes. Students who do not get a strong start in reading skills, vocabulary, and comprehension risk the "downward spiral" described by reading researcher Joseph Torgesen.⁹ Poor skills in phonics and phonemic awareness inhibit the development of fluent reading, which in turn leads to less reading practice, diminished vocabulary, less background knowledge, and a host of academic struggles when reading to learn becomes a requirement in the later elementary years. The majority of these children will remain poor readers through and beyond high school and are less likely than their peers to complete high school or attend college.¹⁰

As in the examples from aviation and medicine, these are truly dire consequences.

So, we have the equivalent of the Pronovost checklist for teachers: five essential components of reading instruction that experts credibly argue would have more than 90 percent of children¹¹ reading by third grade.

But before we can ask Pronovost's question—Are they using it?—we must ask: Do teachers know about it?

That is, do university-based elementary teacher preparation programs ensure that all teacher candidates receive significant

training in the science of reading, taking into their classrooms a deep understanding of the research and a well-developed ability to translate it into effective, engaging instruction? Do they teach the early reading checklist?

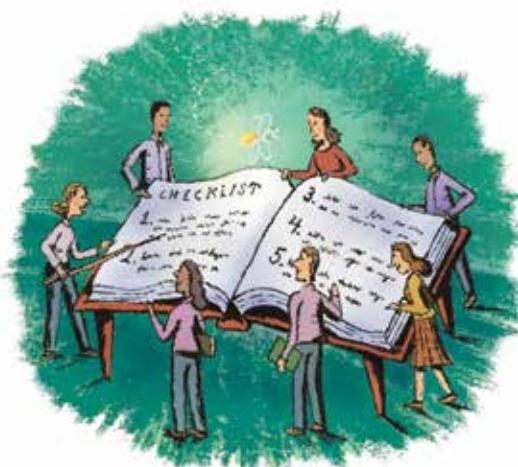
NCTQ's Work

The National Council on Teacher Quality (NCTQ) has been attempting to answer those questions since we began work for our 2006 report, *What Education Schools Aren't Teaching about Reading and What Elementary Teachers Aren't Learning*.[†]

For that project, we developed a methodology in which expert teams, with knowledge of the research and instructional practices of effective early reading instruction, review the required

[†]To read NCTQ's 2006 report, *What Education Schools Aren't Teaching about Reading and What Elementary Teachers Aren't Learning*, go to <http://bit.ly/MKECIn>.

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syllabi—which outline lectures and assignments—and textbooks for the reading courses prospective elementary teachers are required to take.

One team of experts reviewed the syllabi, examining lectures and elements of accountability (assessments, writing assignments, or actual teaching practice) dedicated to each of the five essential components. A separate team of experts examined the most current editions of relevant, required textbooks to determine which of the five essential components are addressed in a manner consistent with the current science of reading. The syllabus and textbook scores were then combined to form a course score for each of the five essential components.

The scoring construct permitted many possible pathways for a course to adequately address a component. Here are some ways a course could be considered to be addressing one of the five components:

- A single adequate text and two lectures;
- Two lectures and a quiz;
- A single adequate text and a quiz;
- A single adequate text and two practice teaching sessions; or
- Two lectures and at least two assignments.

In a typical 15-week course (often called something like Teaching Reading in the Elementary Grades or Early Literacy I), these are not strenuous requirements. (We implicitly

assumed that the classroom instruction is adequate; if a component was on the syllabus or in the text, we took it as taught.) Further, these are minimalist requirements. It's hard to imagine something less than a text and a couple of lectures; indeed, it's easy to imagine much more being required for mastery of the research, assessments, and instructional practices appropriate to develop reading fluency in elementary-age children.

The highest score across *all courses* for any component became the *program* score for that component. Thus, the education school score was assembled from the best work we could find in any required reading course for the program.

We reported school scores on a five-point scale (0–4) proportional to the number of components adequately addressed by the school: a four means that all five components are addressed by the school, while a zero means that at most one component is addressed. We should point out that while this scale differentiated between schools based on the proportion of components addressed, the research notes that all five components are critical for reading success.

For the 2006 report, we used this methodology to evaluate 72 schools of education across the country. We found that only 15 percent of these institutions taught all five essential reading components to prospective elementary teachers.

In the years since, we have released a number of state-level

reports, each one including an examination of early reading preparation. In all cases, our results were consistent with our national project sample: disappointing.

Then, we set out to do it everywhere.

NCTQ's Teacher Prep Review

In January 2011, we sent letters to the approximately 1,400 institutions of higher education housing initial teacher preparation programs (at the undergraduate and/or graduate levels) to announce our partnership with *U.S. News & World Report* in a comprehensive examination of teacher preparation across the country. We selected 1,130 institutions—representing 99 percent of teachers trained annually in traditional, college-based programs—to include in that work. A principal goal of the review was to provide comprehensive guidance to prospective teachers across the country.

Through our national and state projects, we had developed and piloted a number of standards to apply to elementary and secondary teacher preparation programs at the undergraduate and graduate levels. These standards address elements such as the selection criteria of the program, preparation in the content the teacher will teach (which includes a broad liberal arts background, early reading, and early mathematics in the elementary grades), and key facets of the clinical practice experience.

We sought to evaluate 1,130 institutions; however, few provided data following our initial document request. We submitted open records requests to nearly 500 institutions and filed several fair use legal challenges to university claims of exemption through copyright protection. These strategies were reasonably successful with public institutions, but not private ones. Though approved by various government agencies to prepare public school teachers, private universities are not subject to open records laws; as a result, while more than 100 private institutions are included, they are underrepresented in this edition. Our 2013 report, the *Teacher Prep Review*, which was published this month on NCTQ's website (www.nctq.org), will be updated annually, with a goal of complete coverage by the third edition in 2015. There are 609 institutions in the first review.

As shown in Table 1 (on the next page), we found that only 111 programs (18 percent) address all five of the essential components and, therefore, provide adequate instruction in the science of reading to prospective elementary teachers. There is a bright spot in this news: we found such programs in 38 states, which means we can recommend accessible programs to prospective teacher candidates around the country.

Five of these programs also demonstrated "strong design." Not only do they meet our standard for the five essential components, they do so efficiently, with every course and text con-

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Table 1: Percentage of Elementary Programs That Adequately Address NRP's Recommended Components

Number of NRP-Recommended Components	Percentage of Programs Adequately Addressing Components	
	In NCTQ's 2013 review (N=613 programs)	In NCTQ's 2006 review (N=72 programs)
5	18%	15%
4	11%	13%
3	13%	8%
2	13%	13%
1	15%	14%
0	30%	35%

Percentages may not sum to 100 due to rounding. Programs offer undergraduate or graduate elementary teaching degrees with initial certification at an institution.

tributing to the prospective teachers' understanding of the science of reading.

Despite having exemplars, including some that have become so since receiving lower scores in the 2006 national reading report, the field of teacher education as a whole does not appear to have moved much since we published that report. Now, as then, roughly one-third of the programs provide no instruction on the five essential components. Now, as then, almost one-fifth of the programs we reviewed provide adequate instruction—texts, lectures, assignments, teaching practice, or tests—in the five essential components. About half of the remaining programs we reviewed cover one to four of the components. While we distinguish among the number of components each program teaches, all five components were identified by the NRP meta-analysis, not three out of five or four out of five. In other words, a program that addresses three of the five components isn't "60 percent" as good as one that teaches all five; it's actually completely inadequate.

It's been 13 years since the NRP released its meta-analysis. How much longer do teacher preparation programs need to adjust their courses? Looking at the component coverage (shown in Table 2), there is much to be done to permeate the culture of teacher preparation. Instead of grasping onto the success of Pro-novost's central line checklist, we seem to be following in the footsteps of those doctors and nurses sneaking around with razors—unwilling to read, accept, and follow research on best practices.

Just like Table 1, this summary of component coverage found in the 2013 teacher preparation review is similar to the 2006 results (the analogous data from 2006 are in terms of *courses* and thus are not directly comparable to the figures presented in Table 2). Now, as then, the most frequently overlooked components are phonemic awareness and fluency.

About half of the programs we examined meet our standard for phonics and vocabulary.

Amid this sea of disappointing results, the relatively high percentage of programs adequately addressing phonics is promising. For decades, the "reading wars" raged over whether it is best to teach children to read with phonics or whole language. Research strongly supports phonics, but the whole language approach was long-lived. (To be fair, its emphasis on high-quality, engaging books is beneficial—but children must learn to decode, and for that they must learn phonics.) So we were surprised to see lots of phonics in our review. More surprisingly, one-fifth of the programs that adequately address only one component do address phonics. Are the wars ending?

We also found that comprehension is the most frequently addressed—more than half of the programs we examined do so. Digging deeper, we found that in programs that address only one component adequately, nearly two-thirds of the time it is comprehension—useful to children who *already* have some mastery of phonemic awareness, phonics, and fluency skills, and who are making strong progress in acquiring

a broad academic vocabulary.

Fostering Cultural Change in Schools

To be clear, our *Teacher Prep Review* did not set out to explain the current state of teacher preparation; it set out to comprehensively catalog how well teacher preparation programs are performing against a set of standards.

Our intellectual forebear is Abraham Flexner, whose 1910 review¹² of the 155 medical schools of his day detailed such institutional characteristics as whether a high school diploma was required for admission (in many, it was not) and whether laboratory and clinical facilities were available. We sought to do the same: give comprehensive details regarding teacher education programs on as many institutions as we could. The generally disappointing results and the challenges we faced collecting data complicate the search for an explanation.

But, let's start with the obvious. We found that in nearly 500 programs (80 percent of those we could review), prospective elementary teachers are not receiving even minimal preparation in all five components of early reading instruction. This is a tremendous challenge with consequences as potentially dire and life-altering as central line infections. The parallels between Pro-novost's work and teacher preparation in early reading are striking and impossible to ignore:

Table 2: Component Coverage across Preparation Programs

Early Reading Component	Percentage of Programs in NCTQ's 2013 Review Adequately Covering This Component
Phonemic Awareness	31%
Phonics	47%
Fluency	32%
Vocabulary	46%
Comprehension	58%

- Simply distilling and presenting guidance fueled by rigorous scientific research is not sufficient. Pronovost's team saw substantial declines in central line infections only after the ICU nurses were empowered to monitor and remind doctors about the checklist—having doctors monitor themselves was not sufficient.

Likewise, there is substantial evidence in our results that the preparation programs, under the current hodgepodge of oversight and accreditation,¹³ are not translating the research into professional preparation. Incidentally, this argues for an independent examination of teacher preparation—exactly like the one we undertook. Much more research along these lines could be done, and we welcome others to conduct similar work, including verifying and extending our review.

- Even when presented with clear scientific evidence, some professional practitioners—be they doctors in hospitals, instructors in teacher preparation programs, or teachers themselves—may resist changes to practice because their personal experience indicates that what they are doing is effective. Pronovost's initial efforts to reduce surgical site infections were disappointing because his team underestimated the operating room culture, in which shaving *simply had to be more sanitary* because it had always been done (by very smart people, no less!) and no one could remember a string of infections that resulted from doing so.

Similarly, because there is often a lag between actions taken (in teacher preparation and teaching) and eventual outcomes, it is difficult to determine cause and effect. Learning to read is a complicated process that is not influenced solely by events within a classroom, and teachers are typically assigned to a class for only one year. So the eventual outcomes of instruction are not known to earlier teachers (or the institutions that prepared those teachers) and are conflated with many other (often relevant) factors.

While it is understandable to resist change based on personal experience, especially in instructional situations where the risks are high, that is all the more reason why instructional practices should be based on the strongest research available.

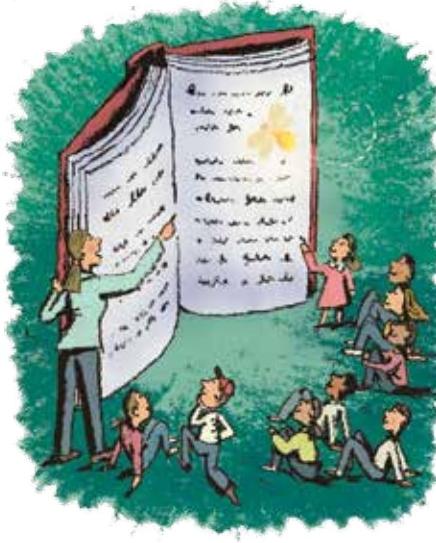
- Culture is critical. Pronovost correctly diagnosed the reason the surgical site infection checklist was not as successful as his team had hoped: they underestimated the stability of the culture in the operating room at Johns Hopkins. He regrouped

and realized that his checklist was just one-half of the solution to the puzzle. The other half was driving cultural change—making diverse groups of people in the same hospital, and in hospitals around the country, focus on the leadership, teamwork, communication, practices, and measurements necessary to drive improvements in patient safety. This realization, and the process and practices it spawned, eventually led to a project with more than 100 intensive care units across the state of Michigan, where central line infections *dropped to zero* within the 18 months of the study (and for four years thereafter).¹⁴

Education is regularly “aboil with some kind of ‘change.’”¹⁵ In fact, this constant agitation leads to a strangely adaptive culture where innovations—good or bad—are met with the cynical observation that “this too shall pass.”

Thirteen years after the NRP report, the cultural changes necessary to drive adoption of the early reading checklist have barely begun. For the teaching profession to thrive, its members must be deeply familiar with the body of research-based knowledge about what will work to better educate children. The five early reading components are part of this knowledge. New teachers need to receive this expertise from the institutions charged with training them. Unless those institutions provide this training, it’s hard to see how K-12 education can make its own strides in eliminating “preventable harm.” □

Endnotes



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